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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,192	11/04/2003	Venkat Selvamanickam	1014-SP132-US	5066

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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/701,192

Applicant(s)

SELVAMANICKAM, VENKAT

Examiner

Richard Bueker

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10,12-14,16-28,30-41 and 43-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10,12-14,16-28,30-41 and 43-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Claims 51-63 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 51-63 are dependent from a cancelled claim.

Claims 51-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not possible to determine the scope of claims 51-63 because they depend from a cancelled claim.

Claims 1, 11, 15, 26-35, 38, 40, 41 and 43-50 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Savvides taken in view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567). Savvides (Figs. 3-6, for example) discloses a tape manufacturing apparatus including plural deposition sources and at least one assist source for depositing a biaxially textured buffer layer. Savvides teaches (para. 64) that in his embodiments described in Figs. 3-6, the vapor of atoms may be supplied by electron beam (e-beam) evaporation, and this teaching anticipates or at least makes obvious the apparatus of applicant's claims 1, 11, 15, 26-35, 38, 40 and 41. Regarding claim 29, the assist sources of Savvides are spaced apart. Regarding the recitation of "in-process repairable e-beam deposition sources" now recited in claim 1, Nakatani (JP 01-208456) and Tsukamoto (JP 03-13567), each discloses an e-beam deposition source comprising an in-process repairable deposition source. It would have been obvious to use an in-process

Art Unit: 1763

repairable e-beam source in an apparatus of the type disclosed by Savvides for the desirable purpose of increasing the productivity of Savvides' apparatus, because the in-process repairable e-beam source of the type taught by Nakatani and Tsukamoto is designed to reduce down-time and increase productivity of a mass production coating apparatus.

Claims 1, 11-15, 23-35, 38, 40, 41 and 43-50 are rejected under 35 U.S.C. 103(a) as obvious over Savvides (2004/0168636) taken in view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567) for the reasons stated above, and taken in further view of Do (6,190,752) and Hammond I (Proc. 8th Int. Symp. Supercond.) This rejection including Do and Hammond I is presented to provide further detailed evidence of the obviousness of the present claims. Do (Fig. 1 and col. 4, lines 11-59, for example) in particular teaches how to deposit a biaxially textured buffer layer by e-beam deposition. Furthermore, Hammond I discusses the formation of IBAD buffer layers, and he suggests the use of e-beam deposition, and he also suggests (page 1029, last para.) that the buffer layer coating zone be as wide as possible and as long as 12 meters (page 1031, para. 3). This presupposes the use of plural e-beam sources. It would have been obvious to one skilled in the art to modify the apparatus of Figs. 3-6 of Savvides to use e-beam sources, in view of Savvides' para. 64 suggestion, and in view of Do's teaching that IBAD buffer layers can successfully be deposited by use of e-beam sources. It would have been further obvious to use a plurality of Do's sources in view of Hammond's teaching that the buffer layer coating zone should be larger than

Art Unit: 1763

would have been possible with one source. Do also teaches (col. 4, lines 20-24) the deposition rates recited in claims 23-25.

Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savvides (2004/0168636) taken in view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567), and taken in further view of Do (6,190,752) and Hammond I (Proc. 8th Int. Symp. Supercond.) for the reasons stated above, and taken in further view of Ebe (6,294,479). Do (col. 4, lines 40-45) teaches the use of a faraday cup and quartz crystal monitor to monitor the flux of ions and evaporant, respectively. Ebe (col. 5, lines 41-67) teaches that the purpose of such monitors is to provide feedback control of the material sources in a deposition process. It is noted that Hammond I also teaches the use of monitors for control of vapor sources. It would have been obvious to one skilled in the art to use the beam monitors of Do to control the beam sources, in view of the teachings of Ebe and Hammond I.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Savvides (2004/0168636) taken in view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567), and taken in further view of in view of Do (6,190,752), Hammond I (Proc. 8th Int. Symp. Supercond.) and Ebe (6,294,479) for the reasons stated above, taken in further view of Jacobson (4,841,908). Jacobson (col. 5, lines 1-5) teaches the use of a system controller to control a variety of parameters (including the web speed as recited in claim 7) in a vacuum coating system. It would have been obvious to use a system controller of the type taught by Jacobson to control the system of Savvides, because Jacobson

Art Unit: 1763

makes clear that a multi-function system can successfully be controlled by using a multi-function system controller.

Claims 8-10, 16-22 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savvides (2004/0168636) taken in view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567), and taken in further view of in view of Do (6,190,752) and Hammond I (Proc. 8th Int. Symp. Supercond.) for the reasons stated above, and taken in further view of Muller (3,303,320), Wakamoto (JP 06-192823) and Bischer (5,262,194). Hammond I teaches that it is desirable to widen an IBAD buffer layer deposition zone, and for that reason it would have been obvious to do so in the apparatus of Savvides. Furthermore, Muller (Figs. 1-3 and col. 2, lines 38-41, for example), Wakamoto (Figs. 1-3 and abstract) and Bischer (Figs. 1 and 2) teach the use of plural distributed e-beam vapor sources positioned to widen the deposition zone for coating a moving tape and to achieve uniformity of deposition across the tape. It would have been obvious to widen the deposition zone of Savvides by providing plural e-beam sources in view of Muller, Wakamoto and Bischer.

Claims 29, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savvides (2004/0168636)) taken in view of Nakatani (JP 01-208456) or Tsukamoto, and taken in further view of taken in view of Do (6,190,752) and Hammond I (Proc. 8th Int. Symp. Supercond.) for the reasons stated above, taken in further view of Wahlin (2003/0193294) (see Figs. 1A and 1B and paragraphs 2 and 32, for example) who discloses a radio frequency argon ion beam source for forming superconductor layers that is optimized for mass production. It includes a collimating grid positioned in

Art Unit: 1763

spaced relationship to an exit grid to collimate species beamlet. Regarding claim 29, it is noted that Wahlin's grid includes spacers. It would have been obvious to use an oxygen beam assist source of the type taught by Wahlin as the oxygen beam assist source in the type of apparatus taught by Hammond I for the desirable purpose of facilitating mass production as desired by Hammond I.

Claims 1-6, 23-41 and 43-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammond I (Proc. 8th Int. Symp. Supercond.) taken in view of Furukawa (5,227,363), Murakami (4,888,202) and Hammond II (2003/0054105), and taken in further view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567). Hammond I (see Fig. 1) discloses a superconductor tape manufacturing apparatus comprising at least two vapor deposition sources. Hammond teaches (page 1030, lines 1 and 2) that the vapor sources can be electron beam heated deposition sources. Hammond also teaches the use of an atomic oxygen source, which is an "assist source" as described by applicant. It is noted that page 6, lines 17-19 of applicant's specification describes an assist source as a source that induces a change in the coating. Hammond's oxygen source meets this description. Hammond I doesn't explicitly describe his oxygen source as "communicating a beam". Furukawa (Figs. 1 and 2 and col. 2, lines 37-39), Murakami (Fig. 1 and col. 4, lines 43-46) and Hammond II (Fig. 3) each also discloses a superconductor manufacturing apparatus having electron beam sources and an atomic oxygen assist source, and they teach that an oxygen source in this type of apparatus is a beam source. It would have been obvious to provide Hammond's oxygen source as a beam source because Furukawa and

Art Unit: 1763

Murakami teach that a beam source can successfully be used for Hammond's purpose.

Regarding the recitation of "in-process repairable e-beam deposition sources" now recited in claim 1, Nakatani and Tsukamoto each discloses an e-beam deposition source comprising an in-process repairable deposition source. It would have been obvious to use an in-process repairable e-beam source in an apparatus of the type discussed by Hammond I, because Hammond I desires high productivity for his mass production coating apparatus, and an in-process repairable e-beam source of the type taught by Nakatani and Tsukamoto is designed to reduce down-time and increase productivity of a mass production coating apparatus. Claims 23-25 recite process limitations that do not limit the claimed apparatus. Regarding the two assist sources recited in claims 27-34, Hammond I teaches that a large deposition zone should be provided, and the use of plural assist sources to provide a larger zone would have been additive and obvious in view of the teachings of Hammond I. regarding claim 35, Murakami teaches the use of an ion source. Regarding claim 37, Wahlin teaches the use of a collimator.

Claims 2-7 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammond I (Proc. 8th Int. Symp. Supercond.) in view of Furukawa (5,227,363), Murakami (4,888,202) and Hammond II (2003/0054105)), and taken in further view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567) as stated above, taken in further view of Hammond II (2003/0054105) and Jacobson (4,841,908). Hammond II (Fig. 3) teaches the use of controllers for sources of the type used by Hammond I, and it would have been obvious to use the Hammond II controllers to control the Hammond I

Art Unit: 1763

sources. Also, Jacobson (col. 5, lines 1-5) teaches the use of a system controller to control a variety of parameters (including the web speed as recited in claim 7) in a vacuum coating system. It would have been obvious to use a system controller of the type taught by Jacobson to control the Hammond I system, because Jacobson makes clear that a multi-function system can successfully be controlled by using a multi-function system controller. Regarding claims 23-25, Hammond II teaches the use of deposition rates within these ranges.

Claims 8-22 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammond I (Proc. 8th Int. Symp. Supercond.) taken in view of Furukawa (5,227,363), Murakami (4,888,202) and Hammond II (2003/0054105), and taken in further view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567), and optionally in further view of Muller (3,303,320), Wakamoto (JP 06-192823) and Bischer (5,262,194). Hammond I (Fig. 1, page 1030, first para., and page 1031, lines 1-9) teaches the use of plural distributed e-beam vapor sources positioned to increase the deposition zone for coating a moving tape. Muller (Figs. 1-3 and col. 2, lines 38-41, for example), Wakamoto (Figs. 1-3 and abstract) and Bischer (Figs. 1 and 2) teach the use of plural distributed e-beam vapor sources positioned to increase the deposition zone for coating a moving tape and to achieve uniformity of deposition across the tape, and are cited to supplement the disclosure of Hammond I. It would have been obvious to provide the plural e-beam sources of Hammond I as necessary to achieve a larger deposition zone with the desired level of coating uniformity, in view of Hammond I alone or in combination with Muller, Wakamoto and Bischer.

Art Unit: 1763

Claims 1-41 and 43-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selvamanikam I (2004/0258851), II (2004/0261708), III (2004/0261707) and/or IV (2005/0011747), taken in view of Savvides (2004/0168636), Do (6,190,752), Hammond I (Proc. 8th Int. Symp. Supercond.) and Hammond II (2003/0054105), and in further view of Nakatani (JP 01-208456) or Tsukamoto (JP 03-13567). The Selvamanikam references disclose apparatus for forming superconductor tapes using a plurality of sources. The cited secondary references also teach apparatus for forming superconductor tapes, and the secondary references make obvious the use of plural e-beam sources to form the desired coatings. It would have been obvious to modify the apparatus of Selvamanikam I, II, III and IV such that plural e-beam sources were used to deposit the desired coatings. Also, Nakatani and Tsukamoto teach the desirability of using in-process repairable e-beam sources, and it would have been obvious to provide the apparatus of Selvmanikam with in-process repairable e-beam sources in the manner taught by Nakaatani or Tsukamoto to improve the productivity of the apparatus.

The applied Selvamanikam references have a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not

Art Unit: 1763

claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Applicants' arguments have been considered but are not persuasive. In view of the teachings of Nakatani or Tsukamoto, the use of in-process repairable e-beam sources in an e-beam coating apparatus would have been obvious, for the sake of improving the productivity of the apparatus. This teaching is also obviously applicable to an e-beam coating apparatus of the particular type taught by Savvides, Hammond or Selvamanickam.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


Art Unit: 1763

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Richard Bueker
Primary Examiner
Art Unit 1763